Patent Claims

1. Method for producing an integrated circuit (23) with a rewiring device (18, 19), having the following steps:

provision of a carrier device (10) with predefined or subsequently patterned cutouts (11);

application of at least one integrated circuit (14) upside down to the carrier device (10) in such a way that the defined cutouts (11) of the carrier device (10) are located above at least one connection device (15) of the integrated circuit (14);

application of an insulation device (17) to that side of the carrier device (10) which is not covered by the integrated circuit (14), omitting the at least one connection device (15) in the cutout (11);

application of the patterned rewiring device (18, 19) to the insulation device (17);

application of a patterned solder resist device (20) to the patterned rewiring device (18, 19); and

patterned application of solder balls (22) on sections (21) of the rewiring device (18) which are not covered by the patterned solder resist device (20).

2. Method according to Claim 1,
characterized
in that the carrier device (10) is a film in which the at least one cutout (11) is present in the form of a stamped-out hole.

3. Method according to Claim 1 or 2,
characterized

in that, before the application of the integrated circuit (14), an adhesive (12) is applied to the carrier device (10).

4. Method according to one of the preceding claims, characterized
in that the carrier device (10) is clamped in a clamping-in device (13) such as e.g. a frame.

5. Method according to one of the preceding claims, characterized
in that a multiplicity of integrated circuits (14) are applied to the carrier device (10) by means of a placement device, such as e.g. a pick-and-place tool.

6. Method according to one of the preceding claims, characterized
in that a protection device (16) is applied above the carrier device (10) and the at least one integrated circuit (14) applied.

7. Method according to Claim 6,
characterized
in that the protection device (16) is applied in an injection-molding or another potting or printing process and/or is subsequently partly or completely cured.

8. Method according to one of the preceding claims, characterized
in that a polymer is applied as the insulation device (17).

9. Method according to one of the preceding claims, characterized
in that the insulation device (17) is printed on or produced in a photolithographic process.

10. Method according to one of the preceding claims, characterized
in that the patterned rewiring device (18, 19) is applied to the insulation device (17) by means of the following steps:

application of a carrier metallization to the insulation device (17);

application and patterning of a mask on the carrier metallization;

application of a conductor track metallization in regions of the carrier metallization which are not covered by the patterned mask;

removal of the mask; and

patterning of the carrier metallization in accordance with the conductor track metallization structure.

11. Method according to Claim 10,
characterized
in that the carrier metallization is sputtered on and/or the mask is patterned photolithographically and/or the conductor track metallization (18) is electrochemically plated and/or the carrier metallization is patterned in an etching step.

12. Method according to one of the preceding claims, characterized
in that the solder resist device (20) has a polymer.

13. Method according to one of the preceding claims, characterized
in that the solder resist device (20) is printed on.

14. Method according to one of the preceding claims, characterized
in that the solder balls (22) are applied in patterned fashion in a printing process and are subsequently reliquefied, preferably in a reflow furnace.

15. Method according to one of the preceding claims, characterized
in that a multiplicity of integrated circuits (14) on a carrier device (10), after the application of the solder balls (22), are separated into individual integrated circuits (23) or groups of integrated circuits (23).

16. Method according to Claim 15,
characterized
in that a multiplicity of integrated circuits (14, 23) with rewiring devices (18, 19) on the carrier device (10) undergo a functional test prior to the separation.

17. Method according to one of the preceding claims, characterized
in that the patterned rewiring device (18, 19) is patterned in such a way that it extends laterally beyond the integrated circuit (14).

18. Method according to one of the preceding claims, characterized
in that multichip modules are formed, which preferably have different individual ICs.

19. Integrated circuit (23) with a rewiring device (18, 19), having:

a carrier device (10) with predefined or subsequently patterned cutoutes (11);

at least one integrated circuit (14) upside down on the carrier device (10) in such a way that the defined cutoutes (11) of the carrier device (10) are located above at least one connection device (15) of the integrated circuit (14);

an insulation device (17) on that side of the carrier device (10) which is not covered by the integrated circuit (14), omitting the at least one connection device (15) in the cutout (11);

the patterned rewiring device (18, 19) on the insulation device (17);

a patterned solder resist device (20) on the patterned rewiring device (18, 19); and

solder balls (22) on sections (21) on the rewiring device (18) which are not covered by the patterned solder resist device (20).